



Learning Style : Preferences of pre-service student teachers in Oman

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ABSTRACT

The aim of this study was to investigate the learning style preferences of a group of pre-service student teachers in two majors at the teacher preparation program of the College of Education/Sultan Qaboos University, Oman, namely the EFL program and the Arabic program. It also investigated the differences in students' learning style preferences attributed to major, gender and academic level. A total of 124 College of Education students were randomly selected from the EFL major (76) and Arabic major (48) teacher preparation program to participate in the study by answering the VAK learning style questionnaire. The 24 item VAK questionnaire defines preference of learning based on the sensory modalities: visual, aural and kinesthetic. Results revealed the order of preferred learning styles as: visual, auditory, and then kinesthetic but with an overall moderate preference for all three dimensions. There were significant differences in student-teachers' preferences for learning styles attributed to gender in favour of females mainly in the visual and kinesthetic dimensions. Results also revealed significant differences attributed to student-teachers' area of specialization in favour of English major students mainly in the visual and kinesthetic dimensions. There were, however, no significant differences resulting from students' academic level. The study urges educationists in higher education institutions to make the use of learning style inventories a regular practice in their classes.

Key words : Learning styles, College of Education, Pre-service teachers, Oman

Introduction

Maximizing students' learning has been the endeavor of educationists throughout history. A shift in focus from teacher-led to learner-centered instruction has become indispensable. Higher education institutions have found themselves in a position where traditional approaches of teaching are no longer the answer to most questions concerned with improving the quality of the education process. With this realization, a lot of higher education institutions have made it a mission for them to provide a holistic education that meets students' diverse multi-level abilities and prepares them to become self-efficient and lifelong learners (Rahal, 2010). Learners have become the center of the educational process in which their learning styles, preferences, needs and interests, likes and dislikes as well as capabilities are becoming more and more crucial in achieving the ultimate goal of improved student learning (Gilakjani, 2012; Lefoe, 1998). Richardson (2010) explains how the application of learning style theories makes it possible to bring about "more desirable approaches to studying in university students through the use of appropriate course design, appropriate teaching methods or appropriate forms of assessment" (p. 1).

The literature on learning styles reports a number of benefits for incorporating them in teaching. Identifying learners' learning styles helps in ensuring not only better student learning (Felder and Silverman (1988) but also higher level of motivation for learning among students (Hein and Bundy, 1999). Moreover, Montgomery and Groat (1998) assert that by knowing students' learning styles and considering them while teaching, teachers create a "dialogue" between teaching and learning and hence emphasize "the interactive, cooperative (and) relational aspects of teaching and learning" (Tiberius, 1986, cited in Montgomery and Groat, 1998). Incorporating knowledge of students' different learning styles can also give teachers the opportunity to respond to a more diverse student body and makes teaching more rewarding and satisfying (ibid, p.2). This has made it incumbent upon academicians, teachers and researchers to seek ways of identifying learners' preferred learning styles and incorporate them in their teaching practices.

There is a plethora of studies that investigated students' learning styles, both in L1 (Felder, 1993) and L2 contexts (Rahal and Palfreyman, 2009; Urval et al., 2004; Reid, 1987). Results were so varied and never conclusive. However, in the context of the present study, Oman,

there have been very few studies on the topic (Arden-close, 1999; Abu Radwan, 2014; Panambur et al., 2014) and there is still a pressing need to explore different facets of it. Hence, this study is interested in investigating the preferred learning modalities of College of Education students from two different majors: Arabic and EFL. It will also look at the effect of two specific variables: students' gender and students' academic level. Having this information may assist faculty members in the two departments in the development of teaching approaches that meet the needs of the different learning modalities. It will also help students become more aware of their preferred learning modalities and act upon this knowledge both while at college and later on when teaching in the field.

Review of literature

Over the last thirty years or so, the term "learning styles" has been widely used in the literature to label a very broad and relatively diffuse concept (Bedford, 2006). Keffe (1979) defines learning styles as "the composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment" (p.4).

However, Oxford and Anderson (1995) add three more aspects to the definition of learning styles: an executive aspect, a social aspect and a behavioral aspect. Hence, they suggest that learning styles have six interrelated aspects:

1. Cognitive elements include preferred or habitual patterns of mental functioning.
2. The executive aspect deals with the degree to which a person seeks order, organization and closure, and manages his or her own learning processes.
3. The affective aspect reflects clusters of attitude, beliefs and values that influence what an individual will pay most attention to in a learning situation.
4. The social aspect is concerned with the preferred extent of involvement with other people while learning.
5. The psychological aspect involves at least partly anatomically-based sensory and perceptual tendencies of the person.
6. The behavioral aspect is where the learning style relates to a tendency to actively seek situations compatible with one's own

learning preferences (Oxford and Anderson, 1995: 203).

The learning style paradigm is based on the cognitivists' and constructivists' views of learning. Thompson et al. (1996: 11) state that "cognitive theory concentrates on the conceptualization of students' learning processes. It focuses on the exploration of the way information is received, organized, retained and used by the brain". Thus, cognitivists treat learners as thinking beings and put them firmly at the centre of the learning process by stressing that learning will only take place when the matter to be learnt is meaningful to the learners. As Lefoe (1998: 455) asserts in this learning paradigm, "more attention was given to the learning process and a greater degree of autonomy and initiative was given to the learner." Therefore, it is of prime importance to understand learners' preferred learning styles and take them into account when teaching.

From the constructivists' point of view, on the other hand, identifying learners' learning styles would help teachers to use suitable instructional strategies which support students' construction of knowledge. This is because learning styles, as operationally defined by Felder and Henriques (1995: 21), are "the ways in which an individual characteristically acquires, retains, and retrieves information." Teachers' understanding of such processes in the learners is crucial in the learning paradigm of constructivism. Miller (2002:4) states that, "one of the important aspects of a teacher who comes from a constructivist paradigm is that s/he appreciates (and embraces) the prior knowledge, beliefs, and experiences that students bring into the classroom with them." In addition, constructivism as a theory of learning emphasizes students' ability "to develop and construct their own understanding of the material based upon their own knowledge and beliefs and experiences in concern with new knowledge presented in the classroom" (Miller, 2000: 92, as cited in Miller, 2002:1).

Thus, students' knowledge about their own preferred learning styles is necessary for them to understand their strengths and weaknesses in learning, and try to alter their less preferred modes of learning. To sum up, identifying learners' learning styles would provide a learning setting that would help "stimulate learners so that their thinking is related to actual practice" (Honebein, 1996: 20). This realistic or authentic context for learning is considered the basis for many constructivist learning environments (Honebein, 1996; Lefoe, 1998).

Various models have been developed in the last few decades to investigate learners' preferred learning styles (e.g. Felder and Silverman, 1988; Kolb, 1984; Reid, 1987; Myers-Briggs, 1985; Grasha, 1996). One of the most well-known and widely used learning styles models was developed by Myers and Briggs and is often referred to as the Myers-Briggs Type Indicators (Briggs-Myers, 1985). The model was mainly developed to classify personality types in terms of the way people perceive and react to the world. According to this model, people can be classified into 16 personality types spread along four personality dimensions: orientation to life (extroverted/introverted), perception (sensing/intuitive), decision making (thinking/feeling), and attitude to the outside world (judgment/perception) (Montgomery and Groat, 1998; Rahal and Palfreyman, 2009). The Myers-Briggs model has a number of implications for teaching. The most important one is that teachers should provide a variety of learning experiences for their students to make sure that each learning style is addressed in one way or another during instruction (Montgomery and Groat, 1998).

Felder and Silverman (1988) developed another model that classified learners' learning styles into four dimensions, i.e., *perceiving information* (sensing/intuitive), *inputting information* (visual/verbal), *processing information* (active/reflective) and *understanding information* (sequential/global).

The sensing/intuitive dimension which indicates whether the learners are sensing learners who favour information that comes in through their senses, or intuitive learners who favour information that arises internally through memory, reflection, and imagination (Felder, 1993).

The visual/verbal dimension which helps to understand through which sensory channel external information is most effectively perceived by learners so as to reveal whether they are visual or verbal. Visual learners are those who favour obtaining data from visual representations such as graphs, charts, pictures, and diagrams, while

verbal learners prefer to obtain data from verbal information such as written texts or lectures, spoken words and mathematical formulas (Alfonseca et al., 2006; Felder, 1993).

The third dimension (active/reflective) aims to differentiate learners based on the way they prefer to process information. In other words, active learners who prefer to learn by trying things out and doing something beyond listening and watching (e.g., discussing, questioning, or arguing) will be distinguished from reflective learners who prefer observation to active experimentation.

The fourth dimension is concerned with understanding information. A distinction is made between learners who favour accessing well-structured information sequentially, studying each subject step by step, i.e. sequential learners, and those who prefer building a knowledge map from the exploration of the information by having a look at the whole information space in a more flexible way, i.e. global learners.

Another commonly used learning style model is Fleming's VAK model that classifies learners into visual, auditory and kinesthetic learners. Fleming has developed a questionnaire that helps both students and teachers assess students' preferred sensory way to take in new information. According to this model, students can be:

Visual: Visual learners prefer the use of images, maps, and graphic organizers to access and understand new information.

Auditory: Auditory learners understand new content better through listening and speaking in situations such as lectures and group discussions. Aural learners use repetition as a study technique and benefit from the use of mnemonic devices.

Kinesthetic: kinesthetic learners understand better through tactile representations of information. They are hands-on learners and learn best through figuring things out by hand. Learning Style (2015).

Similar to other models, VAK asserts that knowledge of and acting on students' modal preferences, once identified, is an important condition for improving one's learning (Fleming and Baume, 2006). One of the advantages of using the VAK inventory or questionnaire is that it is easy to use for self-assessment and as Fleming and Baume (2006) put it, "self knowledge is a good start" (p.4). Once students get trained to recognize their preferred modes of learning "modal preferences", it becomes easier for both students and teachers to modify their behavior accordingly.

The learning style inventory (VARK) has been adopted and adapted by various researchers with different results (Melton, 1990; Hyland, 1993; Peacock, 2001; Riazi and Riasati, 2007; Reid, 1987; Al Khatnai, 2011; Saadi, 2012). For example, Reid (1987) reported that Chinese students were found to favour kinesthetic and tactile styles over other styles (Reid, 1987; Melton, 1990). Hyland (1993) reported that Japanese learners favoured auditory and tactile styles and did not favour visual styles of learning. Peacock's (2001) research indicated that EFL learners seemed to prefer kinesthetic learning to other styles.

Reid's study (1987) also reported significant differences between males and females in respect of their learning style preferences, with males preferring visual and tactile learning significantly more than females. Honigsfeld et al. (2003; cited in Saadi, 2014), in their study on learning style preferences in four countries reported significant differences between genders in the general sample and also found significant differences for the interaction of country by gender. On the other hand, Saadi (2014) on the basis of several studies conducted in the Arab world concluded that no significant differences were found" (p.161).

Lincoln and Rademacher (2006) reported that female EFL learners had a greater tendency to use their auditory senses in learning than males. The findings of this study correspond to those of Ramayah et al., 2009, cited in Saadi (2014) which revealed differences in preferences for learning styles due to gender in general and greater preferences for visual learning in particular by females than by their male counterparts.

Another variable that is often looked at in research is whether stu-

dents' preferred learning styles vary across majors/fields of study. Reid's study of student learning styles in six major fields (1987) showed no significant differences due to their major field of study. Her results in general indicated that "Kinesthetic learning was a major learning style preference and that group learning was considered a negative learning style by students in all major fields except computer science. The visual learning style was selected as a major learning style only by students in hard sciences....." (p. 94). Reid's study has also found that humanities majors showed the least amount of orientation towards visual styles of learning. Generally, Grasha (1984), cited in Reid (1987) maintained that students with certain learning styles preferred different content areas (p.95).

Students' academic level was another variable investigated in research on learning style preferences. Reid (1987) found significant differences in learning styles in relation to the level of the students: graduate students indicated a significantly greater preference for visual and tactile learning than undergraduate students, whereas undergraduate students were significantly more auditory than graduate students. It was also found that both graduate and undergraduate students strongly preferred to learn through kinesthetic and tactile means. In addition, males preferred visual and tactile learning significantly more than females (pp.93-94).

Thus the literature emphasizes the importance of identifying and examining students' learning styles and has revealed different results in response most probably to differences in cultures and educational contexts. Heillberg and Tharp (2002), cited in Akbari and Soltani (2009) also contend that the fact that research on learning styles comes from several disciplines has contributed to the disjointed, inconsistent and often contradictory information regarding what learning styles are and how they can be measured. Scarcity of pertinent research in the Omani higher education context highlights the need to study the students' learning style preferences of one particular college, the College of Education at SQU.

Purpose of the Study

The study is aimed at investigating the learning style preferences of pre-service student teachers in two majors at the teacher preparation program of the College of Education/Sultan Qaboos University, namely the EFL program and the Arabic program. It also investigated the differences in students' learning style preferences attributed to major, gender and academic level.

Research Questions

The paper attempts to answer the following research questions:

What are the EFL and Arabic student teachers' preferred learning styles?

Are there any significant differences in their learning style preferences due to their major, gender and academic level?

Methodology

Instrument:

The instrument used for data collection was adopted from the VARK learning style inventory used at Odessa College in the USA. The VARK questionnaire or VAK as used in the present study, has been recognized in the learning styles literature as a simple, freely available, easy to administer tool that "encourages students to describe their behavior in a manner they can identify with and accept" (Urval et. al. 2014). The survey questionnaire consisted of 24 items on learning style preferences to be measured by Visual Modality, Auditory Modality and Kinesthetic/Tactile Modality (see Appendix). Learning style inventory (2015).

Sample

The sample of the study comprised 124 College of Education students. They were randomly selected from the EFL major (76) and Arabic major (48) teacher preparation programs. Students were in their final year of study and were all taking Teaching Methods courses.

Findings of the study

Student teachers' learning style preferences

Table 1: Means and Standard Deviation for Student Teachers' Learning Style Preferences (N=124)

Learning Styles Modality/Dimension	Mean	SD
Visual Modality	2.3407	.27346
Auditory Modality	2.1087	.30153
Kinesthetic/Tactile Modality	2.0040	.29040
Overall	2.0644	.18513

Table 1 shows the means and the standard deviations of the three dimensions of learning styles. Three scales were used in interpreting the data: (i) 2.4 and above indicating a high preference for the learning style; (ii) less than 2.4 and greater than 1.6 indicating a moderate preference; and (iii) less than 1.6 indicating a low preference. The table reveals an overall moderate preference for the three dimensions of learning styles with an overall mean of 2.06. It also shows that the student-teachers had a greater preference for the visual style of learning than for the auditory styles; the least preference was for the use of kinesthetic/tactile styles. Thus, the order of preferred learning styles was 'Visual, Auditory, Tactile'.

Table 2: Means and Standard Deviation for Student -Teachers' Visual Learning Style Preferences

Visual Learning Styles	Mean	SD
2. I prefer to see information written on a chalkboard and supplemented by visual aids and assigned readings.	2.60	.53979
3. I like to write things down or to take notes for visual review.	2.58	.59941
7. I am skillful with and enjoy developing and making graphs and charts.	1.93	.68874
10. I can easily understand and follow directions on a map.	2.31	.68879
14. I can understand a news article better by reading about it in a newspaper than by listening to a report about it on the radio.	2.25	.71710
16. I think the best way to remember something is to picture it in your head.	2.53	.60437
19. I am good at working and solving jigsaw puzzles and mazes.	2.07	.70045
22. I prefer to obtain information about an interesting subject by reading about it.	2.47	.59038

A closer look at the various items within each modality/dimension reveals very interesting results. With regard to the visual learning style modality/dimension, the student-teachers showed a higher preference for four learning styles out of 8 with the means of the four items ranging between 2.40 and 2.60. The items 'I prefer to see information written on a chalkboard and supplemented by visual aids and assigned readings', 'I like to write things down or to take notes for visual review', 'I think the best way to remember something is to picture it in your head', and 'I prefer to obtain information about an interesting subject by reading about it' obtained mean scores of 2.60, 2.58, 2.53 and 2.47 respectively. The remaining four items showed a moderate preference with the lowest mean for 'I am skillful with and enjoy developing and making graphs and charts' ($X=1.93$). One possible reason is that making graphs and charts is a task that is less required in EFL and Arabic majors compared with other majors such as math and science.

Table 3: Means and Standard Deviation for the Student-Teachers' Auditory Learning Style Preferences

Auditory Learning Style	Mean	SD
1. I can remember best about a subject by listening to a lecture that includes information, explanations and discussions.	2.47	.63034
5. I require explanations of diagrams, graphs, or visual directions.	2.17	.64671
8. I can tell if sounds match when presented with pairs of sounds.	2.12	.63236
11. I do best in academic subjects by listening to lectures and tapes.	2.02	.68650
13. I learn to spell better by repeating words out loud than by writing the words on paper.	1.99	.77349
18. I would rather listen to a good lecture or speech than read about the same material in a textbook.	2.10	.66771
21. I prefer listening to the news on the radio rather than reading the paper.	2.23	.72256

Table 3: Means and Standard Deviation for the Student-Teachers' Auditory Learning Style Preferences

Auditory Learning Style	Mean	SD
24. I follow oral directions better than written ones.	1.77	.69655

With regard to the auditory modality/dimension, the means of the individual learning styles in Table 3 range between moderate and high preferences. The table shows that the student-teachers had a greater preference for only one of the auditory modes, namely 'I can remember best about a subject by listening to a lecture that includes information, explanations and discussions' (X=2.47); they showed a moderate preference for the others, with the lowest preference for 'I follow oral directions better than written ones' (X=1.77) within this group/dimension. The results indicated that, overall, the student-teachers had a moderate preference for most modalities in the auditory dimension without a low preference for any of the modalities included in this dimension.

Table 4: Means and Standard Deviation for the Student-Teachers' Kinesthetic/Tactile Learning Style Preferences

Kinesthetic/Tactile Style	Mean	SD
4. I prefer to use posters, models, or actual practice and other activities in class.	2.43	.68874
6. I enjoy working with my hands or making things.	2.28	.77102
9. I can remember best by writing things down.	2.52	.61794
12. I play with coins or keys in my pocket.	1.47	.70348
15. I chew gum, smoke or snack while studying.	1.50	.70423
17. I learn the spelling of words by "finger spelling" them.	1.76	.70274
20. I grip objects in my hands during learning periods.	1.90	.69164
23. I feel very comfortable touching others, hugging, handshaking, etc.	2.18	.57096

Table 4 shows that, with respect to kinesthetic/tactile dimension, the student-teachers' preferences ranged from low to high. It shows a higher preference for using two modalities, namely 'I can remember best by writing things down' and 'I prefer to use posters, models, or actual practice and other activities in class' with means of 2.52 and 2.43 respectively. The least preferred modalities were 'I play with coins or keys in my pocket' and 'I chew gum, smoke or snack while studying' with means of =1.47 and =1.50 respectively.

Differences due to gender

Table 5: Independent Sample T-test for Comparison Between Males and Females

Type	G	M	SD	T	Sig. (2-tailed)
Visual	Male	2.22	.246	7.685	.000
	Female	2.5332	.189		
Auditory	Male	2.14	.271	1.20	.234
	Female	2.07	.3414		
Kinesthetic/ Tactile	Male	1.95	.258	2.53	.012
	Female	2.08	.320		
Overall	Male	2.02	.188	3.87	.000
	Female	2.14	.154		
P .05					

Table 5 shows that overall, there are significant differences in student-teachers' preferences for learning styles attributed to gender at the p 0.05 level in favour of females. The results have also shown that overall, both males and females showed a moderate preference for the learning styles included in the study. It was observed that the student-teachers indicated a moderate preference with significant difference between males and females in the visual and kinesthetic dimensions but not for the auditory one. In both dimensions, the significant difference was in favour of females. However, in respect of the auditory dimension there was no significant difference between males and females. Notwithstanding the absence of any significant difference in respect of gender, males showed a greater preference for the auditory dimension than their female counterparts.

Differences due to academic level

Table 6: Independent Sample T-test for Comparing Student-Teachers' Learning Style Preferences According to their Academic Level (GPA) (n= high76 & low 48)

Type	GPA	M	SD	T	Sig (2-tailed)
Visual	high	2.39	.263	2.39	.02
	low	2.27	.276		
Auditory	high	2.11	.308	.068	.94
	low	2.11	.293		
Kinesthetic/Tactile	high	2.02	.337	.69	.50
	low	1.98	.198		
Overall	high	2.05	.185	1.56	.12
	low	2.03	.181		

The Independent Sample t-test results (See Table 6) revealed that, overall, there was no significant differences in the student-teachers' preference for particular learning styles at the 0.05 level attributed to their academic levels.

However, there was a significant difference in respect of the visual dimension in favour of student-teachers with a high GPA; they showed a significantly greater preference for visual learning styles than their counterparts with a low GPA. However, both groups indicated a moderate preference for visual learning styles with means of 2.39 and 2.27 for students with a high and a low GPA respectively at the level of p = 0.18.

Differences due to major

Table 7: Independent Sample T-test-for Comparing the Student-Teachers' Learning Style Preferences According to their Major (N. English=76 & Arabic=48)

Type	M	Mean	SD	T	Sig. (2-tailed)
Visual	E	2.40	.257	2.939	.004
	A	2.26	.278		
Auditory	E	2.11	.302	.324	.746
	A	2.12	.304		
Kinesthetic/Tactile	E	2.07	.301	3.170	.004
	A	1.90	.244		
Overall	E	2.10	.169	2.758	.007
	A	2.01	.198		

The independent sample t-test results (see Table 7)revealed that, overall, there was a significant difference in the student-teachers' preference for particular learning styles at the 0.05 level attributed to their area of specialization with p=.007 in favour of English major students;both the English and Arabic groups showed a moderate preference for the learning styles studied. A significant difference between the two groups was found in visual and kinesthetic dimensions in favour of the English major group; there was no significant difference in the auditory dimension. Both groups showed a moderate preference in all three dimensions except in the case of the visual dimension where the English major student-teachers showed a high preference

Discussion

The student-teachers surveyed in the present study were generally found to show a moderate preference for the three types of learning styles (VAK). The order of preferred learning styles was visual to auditory to kinaesthetic/tactile. This result parallels the findings of

another study that was conducted in a similar context at a neighboring country, Zayed University in the UAE. Rahal and Palfreyman (2009) found that the visual (both picture and word) was stronger than the auditory and kinesthetic. Both results, however, were contrary to what was found in a study of Saudi university students wherein the preferred order was tactile, auditory, and then visual (Al Khatnai, 2011). Chinese students were also reported to favour kinesthetic/tactile styles over other styles (Reid, 1987; Melton, 1990). Hyland's study (1993) showed that Japanese learners favoured auditory and tactile styles over the visual. Peacock's (2001) findings indicated a greater preference by EFL learners for kinesthetic learning style than for other types of learning styles. One possible explanation for Omani universi-

ty students not preferring the kinesthetic style of learning is that they are constrained by the fact that they study in mixed-gender classes where feeling shy in the presence of the other sex is quite normal and maybe even expected.

With regard to the visual dimension, the present study revealed a moderate to high preference for the use of four modalities and a moderate preference for the remaining four. With regard to the auditory dimension, the student-teachers showed a high preference for one of the modalities and a moderate preference for all the others within this dimension. With respect to the kinesthetic/tactile dimension, the student teachers generally showed a moderate and to high preference.

The findings revealed significant differences in the student-teachers' preferences for using learning styles attributed to gender at the $p = 0.05$ level in favour of females. They also indicated that both males and females have showed a moderate preference for the learning styles included. The student teachers were observed to show an overall moderate preference with significant differences for visual and kinesthetic learning styles but not for the auditory. In both the visual and kinesthetic/tactile dimensions, the significant difference was in favour of females; there was, however, no significant difference between males and females with regard to the auditory dimension.

The literature related to gender differences learning styles reports different findings in different contexts. The findings of the present study were in line with those of Reid's (1987) reporting significant differences between males and females in relation to learning style preferences with males preferring visual and tactile styles significantly more than females. Similarly, Honigsfeld et al. (2003; cited in Saadi, 2014) reported significant differences between genders in the general sample in relation to country. On the other hand, Saadi (2014) found no significant differences in learning style preferences between males and females in the studies conducted in Arab countries.

Lincoln and Rademacher (2006) reported that female EFL learners had greater tendency to use their auditory senses in learning more than males. With regard to gender in the visual dimension, the findings of the present study correspond to those of Ramayah, et. al. (2009) (cited in Saadi, 2014), which revealed differences in preferences for learning styles due to gender in general and in the visual dimension in particular where females opted for visual learning styles more than their male counterparts.

With regard to differences in learning style preferences of students from different majors, the findings of the present study revealed an overall significant difference in the student-teachers' preferences for particular learning styles at the 0.05 level due to their major field in favour of English major. Both the English and Arabic major groups showed a moderate preference for all the three learning styles. A significant difference between the two groups was found in visual and kinesthetic dimensions but not in the auditory one. Both groups have showed a moderate preference for the three dimensions except in the case of the visual dimension where the English major student-teachers showed a higher preference than the Arabic major. One possible explanation is that, compared with books used by Arabic major students, EFL textbooks used at school as well as the ones student teachers practice using while doing their pre-service training are often more colorful and full of pictures and are, hence, a more familiar mode of study for English major students.

In the literature on this issue, Reid's study of six major fields (1987) showed no significant differences in student learning styles due to their major field of study. Her results indicated kinesthetic learning style was a preferred one. Visual learning style was preferred only by students in hard sciences. In a learning styles research with native and nonnative speakers of English, students who shifted majors during their academic careers were found to enter fields that were more compatible with their cognitive styles (Witkin, Moore, Oltman, et al., 1977; cited in Reid, 1987). Grasha (1984) maintained that, according to some research, people with different learning styles preferred different content areas (cited in Reid, 1987).

With regard to differences in learning styles attributed to students' academic level, the findings of the present study showed that overall

there was no significant difference in the student-teachers' preferences for particular learning styles at the 0.05 level due to their academic levels. However, there was a significant difference between them with regard to the visual dimension in favour of those with a high GPA; they showed a significantly greater preference for visual learning style than their counterparts with a low GPA. Nevertheless, both groups showed a moderate preference for the visual learning style at $p = 0.18$.

Reid (1987) reported to have found significant differences in learners' preferences for learning styles between graduates and undergraduates; graduate students showed a significantly greater preference for visual and tactile learning than undergraduate students; undergraduates were significantly more auditory than graduates. It was also found that both graduates and undergraduates strongly preferred kinesthetic and tactile learning. In addition, males preferred visual and tactile learning significantly more than females.

Summary

The findings of the present study seem to parallel, support, and add to previous research in this area in several ways:

Pre-service EFL and Arabic student-teachers showed a moderate preference for the VAK learning styles. They also appeared to show a strong to moderate preference for certain modalities in the dimensions studied.

Male and Female EFL and Arabic student-teachers differed significantly in their overall perceptual preferences in learning styles of Visual and kinesthetic/tactile dimensions in favour of females.

With regard to academic level in terms of High and Low level GPAs, EFL and Arabic student-teachers differed significantly in their perceptual preferences for learning style of Visual dimension in favour of those with a high GPA.

EFL and Arabic student-teachers differed significantly in their overall perceptual preferences of learning style of both visual and kinesthetic modalities of learning in favour of EFL students but not in the auditory dimension.

Conclusion and implications

According to Reid (1987: 101), both unconscious or subconscious learning styles can become conscious learning strategies. With this in mind, and considering the findings of the present study, we would like to urge educationists in other departments/colleges of Sultan Qaboos University as well as other higher education institutions to make the use of learning style inventories a regular practice in their classes. We believe this will not only help faculty members in colleges to identify their students' preferences and hence, act accordingly, but it will also help students become more aware of their learning process and focus on developing a repertoire of strategies that are compatible with their learning styles and can, hence, promote their learning. This becomes even more important in the context of the present study as pre-service teachers can carry this useful knowledge and practice with them and implement it with their own students at schools. As a matter of fact, diversified teaching is one of the main elements of the College of Education's conceptual framework. According to this framework, "graduates of the College of Education diversify their methods of teaching in a way that takes into consideration all learners who are central in the teaching learning process". (College of Education Conceptual Framework).

Indeed, attending to students' different learning styles is one important measure to attain diversity which is a key standard to measure the success of any higher education institution.

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